

REF. NO.	TOWN	ROUTE/ ROAD	LENGTH (Mi.)	Treatment	COMMENTS (Brief descriptions of beginning and ending points, etc)	Program
4-11	Francestown	NH 47	3.47	Double Chip Seal	From Bennington-Francestown TL to a pavement joint at end of 2005 sidewalk project (~700 ft before Lina Lane). Double Chip-Sealed. Advertised as separate contract: Francestown 14810	District
6-02	Hampton	NH 1A	2.50	Micro-surfacing	Northbound Hampton River Bridge to Dumas Ave. Southbound Dumas Ave to Ashworth Ave. Skip Reconstructed Section (Boars Head to Church St.). Micro-surfaced. Advertised as separate contract: Hampton 14807	District
6-14	Kingston	NH 125	0.75	Ultra-Thin Friction Course	From northern intersection with NH 107 southerly to northern intersection with NH 111. Nova Chipped. To advertise as a separate contract	District
F-05	Statewide Crack Seal			Crack Sealing	2002 Federal Resurfacing program and other selected sections	FRP
	Seabrook	NH 286	2.36	Crack Sealing	From Massachusetts State line to the intersection of Rte 1A	FRP
	Warren	NH 25	2.30	Crack Sealing	From the pavement joint 125 ft north of the intersection of Rte 118 to a pavement joint at the change in the roadway typical	FRP
	Warren-Haverhill	NH 25	4.08	Crack Sealing	From the pavement joint 750 ft south of the Benton/ Warren Town Haverhill line in Warren to a pavement joint 1,000 ft north of Gherardi Road in Haverhill	FRP
	Bethlehem-Carroll	US 302	5.25	Crack Sealing	From Pierce Bridge in Bethlehem to a pavement joint located approximately 1,000 ft east of US 3 in Carroll	FRP
	Gilford	NH 11	5.69	Crack Sealing	From a pavement joint just east of the entrance to Ellacoya State Park to easterly intersection with US 3 at Compact line	FRP
	Newbury-Bradford	NH 103	7.12	Crack Sealing	From a pavement joint at Brookside Drive in Newbury to a pavement joint at the Bradford/Warner Town line	FRP
	Franconia-Carroll	US 3	10.45	Crack Sealing	From the end of the I-93 Off Ramp (at the concrete nose) in Franconia to a pavement joint 875 ft north of the intersection of Rte 302 in Carroll	FRP
	Walpole	NH 12	3.69	Crack Sealing	From a pavement joint just south of Turnpike Road in Walpole to the Railroad crossing at the intersection of Church Street in Walpole	FRP
	Milford-Merrimack	NH 101A	4.30	Crack Sealing	From a pavement joint just west of the Rte 101 overpass in Milford to the Merrimack/ Nashua Line	FRP
	Hillsborough	NH 9	8.23	Crack Sealing	From a pavement joint 1,500 ft west of the intersection of Rte 31N to a pavement joint located east of the Henniker Street exit	FRP
I-01A	Bow - Hopkinton	I-89	6.80	Micro-surfacing	From the junction of NH 3A north 3.4 miles to a pavement joint located at crossover south of Turkey Pond bridge (north of Exit 2)	IPPP
I-02	Warner	I-89 ramps	2.49	Mastic Repair	Exits 8 & 9 ramps	IPPP
I-03	Statewide Crack Seal	I-93 and I-393	93.00	Crack Sealing	Various sections on I-93 and I-393	IPPP
I-03	Statewide Crack Seal	I-93	76.00	Crack Sealing and/or Mastic Repair	Various sections on I-93	IPPP
I-03	Statewide Crack Seal	I-93	15.00	Mastic Repair	Various sections on I-93	IPPP

**Some Useful Definitions:**

**Pavement Preservation Program:** is “a program employing a network level, long-term strategy that enhances pavement life by using an integrated, cost-effective set of practices that extend pavement life, improve safety and meet motorists expectations” as defined by the FHWA Pavement Preservation Expert Task Group. The Program primarily consists of three activities: **preventative maintenance**, **minor light rehabilitation** (non-structural), and **routine maintenance**. An effective Program will address pavements while they are still in good condition and before the onset of serious damage. By applying a cost-effective treatment to the right road at the right time, the pavement is restored almost to its original condition. The cumulative effect of systematic, successive preservation treatments is to postpone costly major rehabilitation and reconstruction. Studies have shown that for every dollar spent on pavement preservation saves four to eight dollars in rehabilitation costs. Additionally, performing a series of successive preservation treatments over the life of the pavement is less disruptive to traffic flow than long closures normally associated with reconstruction type projects.

**Preventative Maintenance:** A planned activity performed in advance of a critical repair/expenseive repair where the activity extends the remaining service life of the road without significantly increasing the structural capacity. Preventative maintenance is typically applied to pavements in good condition having significant remaining service life (applying the right treatment to the right road at the right time). Examples of preventative maintenance treatments include crack sealing, crack filling, mastic repairs, chip sealing, slurry seals, fog seals, micro-surfacing, thin and ultra-thin friction course, and cold in-place and hot in-place recycling.

**Preventative Maintenance Treatments:**

- Crack Sealing/Crack Filling** – The placement of thermoplastic materials such as asphalt cement, asphalt rubber, and rubberized asphalt into working and/or non-working cracks to substantially reduce the infiltration of water and debris. Cracks are generally shaped with a power router or saw to form a reservoir, cleaned out with compressed air, and heated prior to placing the sealant. The sealant is then placed into the reservoir and is either recessed filled or flush filled with the pavement surface. A light overband (2-3 inches in width) may also be placed over the crack to improve performance. Crack filling is similar to crack sealing except that sealant is directly applied to the crack (without forming a reservoir) and is generally applied to just non-working cracks. Studies have indicated that crack sealing may extend the life of pavements by at least 2 years.
- Mastic Repairs** – Crack sealing and crack filling are effective for treating cracks that are open to about 1-1/2 inches. Mastic repairs are used to seal larger cracks and other surface defects such as potholes and small delaminations. Mastic repairs consist of similar thermoplastic materials used for crack sealing and crack filling but includes the addition of lightweight aggregates to stand up to traffic loadings.
- Chip Seals** – The application of asphalt and aggregate chips rolled onto the existing pavement surface. Chip seal may also be placed in multiple layers (e.g., double chip seals and triple chip seals) and may also incorporate the use of rubberized asphalt (e.g., rubber chip seal). Sand seal is also another form of a chip seal but involves the placement of sand instead of aggregate chips. The purpose of chip seals are to seal the pavement, to shed water, enrich hardened/oxidized asphalt, and improve surface friction.
- Slurry Seal** – Mixture of well-graded aggregate and slow setting asphalt emulsion applied to the existing pavement surface. The purpose of slurry seals are to seal surface cracks, correct raveling/oxidation, fill minor irregularities, and restore friction. Due to the slow setting nature, this treatment is better suited for low volume and residential type roads.
- Fog Seal** – The light application of diluted, slow setting asphalt emulsion without aggregate cover. The purpose of fog seals are to seal the pavement, inhibit raveling, and enrich hardened/oxidized asphalt.
- Micro-surfacing** – Mixture of high quality aggregates and polymer modified emulsion binder applied to the existing pavement surface. The purpose of micro-surfacing is to seal the pavement, inhibit raveling and surface oxidation, improve surface friction, and fill wheel ruts and other minor surface irregularities.
- Ultra-Thin Friction Course** – The application of gap-graded, polymer modified Hot Mixed Asphalt (HMA) placed on a heavy, polymer modified emulsified asphalt tack coat on an existing pavement surface. This process is also known and marketed under the name NovaChip®. The purpose of this treatment is to seal the pavement surface and minor surface cracks, increase surface friction, address surface distress, and reduce tire noise.
- Cold/Hot In-place Recycling** – Milling, rejuvenating, and replacement of the top portion of an existing pavement surface (performed with or without the application of heat). The purpose of in-place recycling is to rework the upper 2 to 4 inches of the pavement surface to correct surface distresses and improve profile, crown, and cross-slope.

**Minor Light Rehabilitation:** Minor rehabilitation consists of non-structural enhancements made to existing pavements to eliminate age-related top-down surface cracking and other environmentally related deficiencies such as oxidation and age hardening. Treatments generally consist of hot mix overlays and inlays (less than or equal to 1-1/2” in thickness or depth). Because of the non-structural nature of these treatments, minor rehabilitation is considered to be pavement preservation.

**Routine Maintenance:** Consists of day-to-day activities that are scheduled by maintenance personnel to maintain and preserve the condition of the highway system at a satisfactory level of service. Examples of pavement-related routine maintenance activities are snow removal, cleaning of roadside ditches and structures, maintenance of pavement markings, crack filling, pothole patching and leveling and shimming the road to restore serviceability. Depending on the timing of the application, the nature of the distress, and the type of activity, certain routine maintenance activities may be classified as pavement preservation. These activities are typically performed by Maintenance (in-house) forces.

For more information, feel free to contact Mr. Eric Thibodeau at the NHDOT Pavement Management Section within the Bureau of Materials and Research. He may be reached by phone at 603-271-3151 or by email at [EThibodeau@dot.state.nh.us](mailto:EThibodeau@dot.state.nh.us).